

AGASTYAMALAI AND ITS ENVIRONS : A POTENTIAL AREA FOR A BIOSPHERE RESERVE¹

A. N. HENRY, M. CHANDRABOSE,
M. S. SWAMINATHAN AND N. C. NAIR²
(With a text-figure)

Agastyamalai, a towering peak of 1868 m in the tail-end of the Western Ghats and the adjoining forests in Tirunelveli and Kanniyakumari district of Tamil Nadu, and Trivandrum district of Kerala, covering a total area of about 2000 sq. km. and skirting the peak, form the most diverse and unknown ecosystem in Peninsular India. This area has substantial natural vegetation cover ranging from Scrub forests to Wet evergreen (rain forest) formations. Since Tropical rain forest is entering a period of rapid decline as a world natural resource, Agastyamalai must be regarded as a prime example of this ecosystem in Southern India. Further, the complexity and diversity of flora make it an ideal genepool sanctuary. This area also harbours a number of endemic species of plants that are unique to Peninsular India. In terms of uniqueness, number of endemics, endangered species, floral and faunal representations and the ease of protection, this pocket is an ideal choice for a biosphere reserve.

INTRODUCTION

The attempt to set up a world-wide network of biosphere reserves is a new and important initiative undertaken by the UN- sponsored 'Man and Biosphere' Programme to provide an assured future for mankind. The emphasis of the programme is on the relationship between man and nature. To be successful, it must preserve areas of undisturbed nature as genetic reservoirs and as standards against which change outside can be measured and judged. So far 40 nations have set apart 161 such reserves. In India, the Advisory Committee of the 'Man and Biosphere' Programme, has identified so far twelve biosphere reserves and has decided to set up two of these, namely the Nilgiri and the Namdapha in the first in-

stance. This paper highlights the potentiality of another site in southern India namely "Agastyamalai and its environs" which would best fulfil the objectives of a biosphere reserve.

"The Western Ghats or Sahyadris and the West Coast sub-region" (also classified as "The Malabar Rain Forest Province") is perhaps the richest biogeographic province of the Indian subcontinent. The forest tracts of Agastyamalai and its environs including Mundayanthurai, Kalakad, Mahendragiri, Muthukuzhivayal and Neyyar which are situated at the southern end of the Western Ghats still retain substantial natural vegetation cover. The vegetation occurs in large continuous tracts above 800 m, forming probably the finest remaining example of tropical wet evergreen forest (rain forest) in the Western Ghats. The field studies conducted in this region by the Botanical Survey of India and other agencies have revealed that all the essential criteria for

¹ Accepted March 1982.

² Botanical Survey of India, Coimbatore-641 003.

AGASTYAMALAI AND ITS ENVIRONS

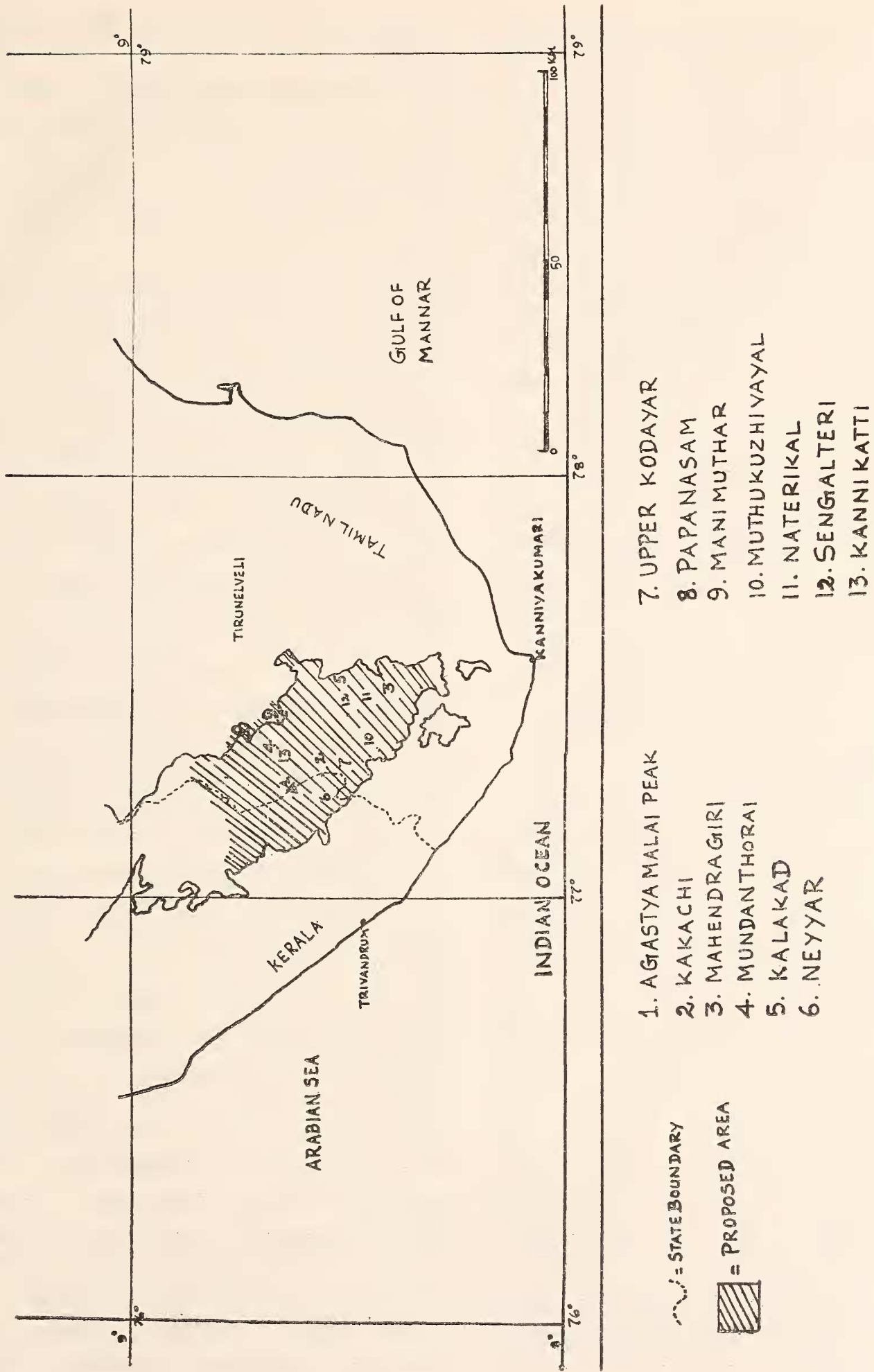


Fig. 1. Map showing the proposed area for the biosphere.

the choice of a biosphere reserve (UNESCO 1974) could be envisaged in these natural forests.

I. Location: The total area proposed for the biosphere reserve is approximately 2000 sq. km. and falls within the hilly tracts of Tirunelveli and Kanniyakumari districts of Tamil Nadu and Trivandrum district of Kerala, lying between $77^{\circ} 5'$ and $77^{\circ} 40'E$, and $8^{\circ} 20'$ and $8^{\circ} 50' N$. (Fig. 1). The entire forest area is hilly, characterised by numerous folds and extensions engulfing small, narrow valleys. The altitude varies from 67 m to 1868 m. The conical Agastyamalai peak, locally known as "Pothikaimudi" and "Agasthiyarkudam" (1868 m) is the highest peak of the range. These hills form a very compact block comprising Papanasam R. F., Singampatti R. F., Kalakadu R. F., Kottur R. F., Kottur extension R. F., Mahendragiri R. F., Kalamalai R. F., Veerapuli R. F., Nattukkaltheri R. F. and Ashambo R. F. This region is drained by several small perennial streams which join to form major river systems such as Tambaraparani, Neyyar, Karamanayar and Kodayar.

The South-West monsoon from June-September, and North-East monsoon in October and November bring rain to this region, and the annual rainfall varies at different places from 89 cm to 625.7 cm.

The hottest months of the year are April and May and the cold season prevails from December to February. The temperature varies between $21^{\circ}C$ and $38^{\circ}C$.

The soils at low elevations consist of red ferruginous sandy loam of very little depth, with loose boulders. On hill slopes which are subjected to heavy wash the soil has a characteristic yellow or red colour. Over the crest and along the higher slopes of the hills where the erosion is excessive, the ground is rocky with the soil shallow and hard. In the wet

evergreen forests, there is a rich collection of humus.

II. Vegetation: Since the ecosystem diversity is quite high, almost all vegetation types known from the Western Ghats occur in this region depending on the altitudinal zonation, such as Southern tropical thorn forest, Southern tropical dry deciduous forest, Grasslands at low altitudes, Southern tropical moist deciduous forest, Southern tropical wet evergreen forest, Subtropical montane forest and Grassy swards at high altitudes.

i. *Southern tropical thorn forest:* This type can be seen at an altitude of about 200 m and occurs around Papanasam, Kalakadu, Tirukurangudi, etc. In these scrub jungles trees like *Acacia chundra* (Roxb.) Willd., *A. horrida* (L.) Willd., *A. planifrons* Wight & Arn., *Euphorbia antiquorum* L., *Zizyphus oenoplia* (L.) Mill. and *Z. xylopyrus* (Retz.) Willd. are common. Amidst these trees, shrubs such as *Carissa carandas* L., *Dichrostachys cinerea* (L.) Wight & Arn., *Dodonaea viscosa* (L.) Jacq., *Securinega leucopyrus* (Willd.) Muell.-Arg. and *S. virosa* (Roxb. ex Willd.) Pax & Hoffm. are frequently met with. The climbers are represented by *Abrus precatorius* L., *Cissus quadrangularis* L., *Jasminum calophyllum* Wall., *Tylophora indica* (Burm. f.) Merrill, etc.

ii. *Southern tropical dry deciduous forest:* These forests occur at an altitude of about 350 m and are located in Kalakadu R. F., Papanasam R. F., Singampatti R. F. and Kottur R. F. The dominant trees in this type are *Adina cordifolia* (Roxb.) Hook. f. ex Brandis, *Anogeissus latifolia* (Roxb.) Bedd., *Dillenia pentagyna* Roxb., *Pterocarpus marsupium* Roxb., *Semecarpus anacardium* L.f. and *Terminalia chebula* (Gaertn.) Retz. Shrubs like *Acacia pennata* (L.) Willd., *Chassalia ophiolyoides* (Roxb.) Craib, *Desmodium triangulare* (Retz.) Merr. var. *congestum* (Wight &

Arn.) Sant. and *Phyllanthus polyphyllus* Willd. are found frequently. Some of the herbaceous species such as *Desmodium triflorum* (L.) DC., *Indigofera prostrata* Willd., *Oryza granulata* (Nees) Arn. ex Steud. and *Rostellularia pumila* Nees are common. Along rocky riversides, *Mangifera indica* L. is commonly met with.

iii. *Grasslands at lower altitudes*: At lower elevations below 500 m, vast stretches of grasslands occur beyond the scrub jungles and deciduous forests. Trees like *Mundulea sericea* (Willd.) A. Chaval and *Terminalia chebula* Retz. are seen sporadically in these grasslands. *Cymbopogon coloratus* (Nees) Stapf and *Themeda cymbaria* Hack. are the two dominant species of grasses occurring in this type. Amidst these, *Euphorbia cristata* Heyne ex Roth and *Rhynchosia rufescens* DC. are noticeable in the dry season.

iv. *Southern tropical moist deciduous forest*: This type of vegetation occurs at an altitude of about 500 m, and covers an extensive area in the proposed biosphere reserve. The forests are thick and densely populated with *Calamus* sp. The top canopy consists of trees such as *Acronychia pedunculata* (L.) Miq., *Dalbergia coromandeliana* Prain, *D. latifolia* Roxb., *Pterocarpus marsupium* Roxb., *Scleropyrum wallichianum* (Wight & Arn.) Arn., *Terminalia chebula* Retz., *T. paniculata* Roth and *Vateria indica* L. Some of the common shrubs found are *Barleria courtallica* Nees, *Blachia calycina* Benth., *Helicteres isora* L., *Ixora brachiata* Roxb., *Mussaenda laxa* (Hook. f.) Hutch. ex Gamble and *Psychotria connata* Wall. *Butea parviflora* Roxb. and *Gnetum ula* Brongn. are the conspicuous lianas met with. The notable climbers are *Calycopteris floribunda* (Roxb.) Poir., *Cynanchum tunicatum* (Retz.) Alston, *Dioscorea oppositifolia* L., *Jasminum rotterianum* Wall. ex DC., *Maerua*

oblongifolia (Forsk.) A. Rich. and *Sarcostigma kleinii* Wight & Arn. Some of the common herbs forming the undergrowth are *Alysicarpus rugosus* (Willd.) DC., *Justicia betonica* L. and *Waltheria indica* L. *Musa superba* Roxb. also occurs in this region.

v. *Southern tropical wet evergreen forest*: These forests occur roughly between 760 m and 1500 m and are located around Mahendragiri peak, Agastyamalai peak, Muthukuzhivayal, Naterikal to Sengaltheri, Upper Kodayar and Athiramalai. Though some of these areas are a little disturbed by road formations, irrigation schemes, hydro-electric projects, etc., most of the areas especially around Agastyamalai peak are undisturbed. The top canopy is extremely dense represented by gigantic trees like *Artocarpus hirsutus* Lam., *Canarium strictum* Roxb., *Cullenia exarillata* Robyns, *Diospyros ebenum* Koen. ex Retz., *Elaeocarpus tuberculatus* Roxb., *Hopea utilis* (Bedd.) Bole and *Palaquium ellipticum* (Dalz.) Baill.

Under these large trees, medium-sized trees which love more shade, form a second storey. Some of the dominant trees in this layer are *Cinnamomum iners* Reinw., *Decussocarpus wallichianus* (Presl) De Lauben., *Eugenia mundagam* Bourd., *Garcinia echinocarpa* Thw. var. *monticola* Mahesh. and *Kingiodendron pinnatum* (Roxb. ex DC.) Harms.

Under this second layer, innumerable shrubs or small trees such as *Agrostistachys indica* Dalz., *Antidesma menasu* Miq. ex Muell.-Arg., *Callicarpa tomentosa* (L.) Murray, *Elaeocarpus munroii* (Wight) Mast., *Eurya nitida* Korth., *Litsea deccanensis* Gamble, *Mallotus distans* Muell.-Arg. and *Tabernaemontana gamblei* Subr. & Henry occur.

Climbers like *Ancistrocladus heyneanus* Wall. ex Graham, *Aristolochia indica* L., *Piper barberi* Gamble, *P. nigrum* L., *Pothos scandens* L. and *Senecio walkeri* Arn. clothe

the large tree trunks, shrubs and small trees.

The following herbs and undershrubs form the ground layer: *Acranthera grandiflora* Bedd., *Apama barberi* Gamble, *Begonia malabarica* Lamk., *Carex filicina* Nees ex Wight, *Elatostema lineolatum* Wight, *Ophiorrhiza eriantha* Wight, *Psychotria curviflora* Wall., *Saproma corymbosum* (Bedd.) Bedd. and *Sarcandra grandifolia* (Miq.) Subr. & Henry are some of the dominant species.

Wild variety of *Elettaria cardamomum* (Roxb.) Maton is seen in some patches. Amongst these moist evergreen forests, dense tracts of *Ochlandra travancorica* (Bedd.) Benth. ex Gamble and *Schumannianthus virgatus* (Roxb.) Rolfe occur extensively, often to the exclusion of all other vegetation.

Epiphytic orchids like *Coelogyne nervosa* A. Rich., *Dendrobium wightii* Hawkes & Heller, *Oberonia brunoniana* Wight and *Sirhookera latifolia* (Wight) O. Kuntze, are commonly seen on tree trunks.

Some of the common ferns are *Angiopteris evecta* (Forst.) Hoffm., *Arachnoides aristata* (Forst.f.) Tindale, *Asplenium tenuifolium* Don, *Cyathea gigantea* (Wall. ex Hook.) Holttum and *Marattia fraxinea* Sm.

vi. *Subtropical montane forest*: There are very few tracts of montane forest remaining in the Western Ghats that can match the Agastyamalai area for its richness of flora and fauna. This type occurs as continuous expanse of the evergreen forests generally above 1500 m around Agastyamalai peak, Mahendragiri peak and Kakachi. The sheltered faces and moist depressions of peaks offer a foothold for these types of forests where the trees are of stunted nature due to the high velocity of wind and high altitude. The height of trees rarely exceeds 6 m, and are densely clothed with lichens, mosses, ferns and orchids. Some of the dominant

species are *Byrsophyllum tetrandrum* (Bedd.) Hook. f. ex Bedd., *Canthium neilgherrense* Wight, *Eugenia mabaeoides* Wight, *Euphorbia santapau* Henry, *Hedyotis purpurascens* Hook. f., *Impatiens leschenaultii* (DC.) Wall. ex Wight & Arn., *Lasianthus blumeanus* Wight, *L. cinereus* Gamble, *Ligustrum decaisnei* Clarke, *Moonia heterophylla* Arn. and *Polyscias acuminata* (Wight) Seem.

vii. *Grasslands at high altitudes*: Grassy swards are seen in smaller dimensions on the exposed rocky surfaces at high altitudes especially around Agastyamalai peak, Mahendragiri peak, Muthukuzhivayal and Kakachi. Some of the common grasses met with are *Arundinella purpurea* Hochst. ex Steud. var. *laxa* Bor, *Chrysopogon orientalis* (Desv.) Camus, *Eulalia phaeothrix* (Hack.) O. Kuntze, *Isachne walkeri* (Arn. ex Steud.) Wight & Arn. ex Thw., *Themeda tremula* (Nees ex Steud.) Hack. and *Zenkeria sebastinei* Henry & Chandr. An interesting herbaceous member of the Dilleniaceae—*Acrotrema arnottianum* Wight, and other herbs like *Centratherum rangacharii* Gamble, *Exacum travancoricum* Bedd., *Heracleum candolleanum* (Wight & Arn.) Gamble, *Leucas vestita* Benth. and *Smithia blanda* Wall. ex Wight & Arn. are frequently met with.

III. *Fauna*: This region is rich in various species of invertebrates, birds, reptiles and mammals. It harbours good populations of such endangered species as the Indian Elephant (*Elephas maximus*), Gaur (*Bos gaurus*), Tiger (*Leo tigris*), Leopard or Panther (*Leo pardus*), Nilgiri Langur (*Presbytis johni*), and notably a good population of the endangered lion-tailed macaque (*Macaca silenus*). Its bird fauna is particularly rich.

IV. *Landscape*: This region provides one of the most magnificent mountain landscapes including the valleys, peaks and mountains

with inaccessible steep rocky slopes covered with dense forests.

V. Zones of the biosphere reserve :

The landscape in general, aids for the organisation of a generalised biosphere reserve wherein all the components making up the reserve are contiguous. The forest tracts encircling the conical Agastyamalai Peak comprise Montane forests, Grassy Swards and dense evergreen forests which are primary and undisturbed due to their occurrence in difficult terrain and steep inhospitable slopes, and these are to be designated as the "Core or Natural Zone" of the biosphere reserve. Around this core zone there are large tracts of little disturbed evergreen forests and most deciduous forests (in and around Kannikatti, Athiramalai, Bonaccord, Upper Kodayar, Muthukuzhivayal, Manjolai, Kakachi, Sengaltheri to Naterikal), and dry deciduous forests (Mundanthurai, Neyyar, Lower Kodayar, Kalakad to Sengaltheri, Manimuthar and Papanasam) and these regions will form the "Manipulative or Buffer Zone", managed for research, education and training activities. Several pockets in these regions are heavily disturbed for the cultivation of teak and rubber (Manipulation — Forestry), and cultivation of Banana, Coffee, Tea, Tapioca, Cardamom, etc. (Manipulation — Agriculture). In the foothills heavy natural or human — caused alterations have taken place, especially in and around the catchment areas of the four major river valley projects namely, Papanasam hydro-electric project, Manimuthar irrigation project, Kodayar hydro-electric project and Neyyar irrigation scheme, form the "Reclamation or Restoration Zone". There are several areas of tribal settlements, namely, Inchikuzhi, Kanthaparai, Anchinazhiathodu, Kodumadi, Kilaviarumalai and Lower Koda-

yar which will form the "Stable Cultural Zone" of the biosphere.

VI. Human Impact : This proposed biosphere reserve located at the southern end of Western Ghats is well protected by natural barriers both by land and seas. The core region is remotely located and completely free from human activities. The biosphere reserve is by and large, already well protected because of the constitution of three well established sanctuaries, namely, Mundanthurai Wild Life Sanctuary, Kalakadu Sanctuary and Neyyar Wild Life Sanctuary. The area also provides examples of a number of human activities in the buffer zone, reclamation zone and cultural zone.

VII. Tribals : Inchikuzhi, Kanthaparai, Lower Kodayar and Anchinazhiathodu are some of the areas where there are settlements of a hill tribe known as 'Kanis'. They live partly on leaves, tubers and fruits of forest plants and by hunting wild animals. In recent years some of them are employed in hydro-electric projects, private estates and forest departments. Even now many of them live on wild plants and animals, and they offer much scope for ethnobiological studies.

VIII. Selection criteria :

1. *Representativeness* : Broadly, an overall representation of the biota of the Western Ghats, particularly of the southern part, is found in Agastyamalai and its environs. Out of about 5000 vascular plant species occurring in the erstwhile Madras Presidency, the proposed biosphere harbours over 2000. As the area is located at the southern end of Peninsular India, the Indian Ocean, Arabian Sea and Bay of Bengal act as barriers towards the south, against migration of plants from other countries. The natural barriers, varied altitude, habitats, climate and rainfall have

resulted in the development of a unique flora and fauna. About 150 localised endemic species of plants occur in this region.

In recent years about 25 new taxa of plants have been discovered from the area, and some of them are *Cheilanthes keralensis* Nair & Ghosh, *Euphorbia santapau* Henry, *Homalium jainii* Henry & Swamin., *Hoya kanyakumariana* Henry & Swamin., *Indotristicha tirunelveliana* Sharma et al., *Marsdenia tirunelvelica* Henry & Subr., *Memecylon subramanii* Henry, *Reidia singampattiana* Sebastine & Henry, *Rhynchosia jacobii* Chandrase & Shetty, *Tylophora subramanii* Henry and *Zenkeria sebastinei* Henry & Chandrasekaran, a new genus and species was also discovered. The following are some of the endemic trees restricted only in the biosphere reserve and its neighbourhood: *Aglaia elaeagnoidea* (Juss.) Benth. var. *bourdillonii* (Gamble) K.K.N. Nair, *Diospyros barberi* Ramas., *Elaeocarpus venustus* Bedd., *Eugenia floccosa* Bedd., *E. rottleriana* Wight & Arn., *E. singampattiana* Bedd., *Garcinia travancorica* Bedd., *Humboldtia unijuga* Bedd., *Symplocos barberi* Gamble, *S. oligandra* Bedd., *Syzygium microphyllum* (Bedd.) Gamble. Among the large number of endemic herbs, shrubs and climbers localised in this tract, a few are: *Belosynopsis kewensis* Hassk., *Crotalaria scabra* Gamble, *Desmodium dolabrifforme* Benth., *Eugenia rottleriana* Wight & Arn., *Exacum travancoricum* Bedd., *Grewia pandaca* J. R. Drumm., *Hedyotis villosostipulata* (Gamble) Rolla Rao & Hemadri, *Impatiens travancorica* Bedd., *Knoxia linearis* Gamble, *Octotropis travancorica* Bedd., *Psychotria globicephala* Gamble, *Senecio calcadensis* Ramas., *Sonerila clarkei* Cogn., *Symplocos sessilis* Clarke and *Vernonia gossypina* Gamble. One striking peculiarity of this area

lies in the large preponderance of several typical Sri Lanka plants.

2. *Ecosystem Diversity*: The proposed reserve displays a tremendous diversity of plant and animal life due to its geographical position, variation of altitudinal zones, rainfall, presence of large number of tributaries of the river systems, soil types etc. Almost all vegetation types known from the Western Ghats ranging from Scrub forests to Wet evergreen formations, and subtropical Montane forests interspersed with Grassy Swards occur in this region (*vide* II. Vegetation). The complexity and diversity of flora make it an ideal genepool sanctuary. Further the area harbours a number of endemic species of plants that are unique to Peninsular India.

3. *Naturalness*: The entire region around Agastyamalai peak and also large patches especially around Mahendragiri peak and Muthukuzhivayal possess natural biota. These areas represent natural forests which had developed perhaps in course of millions of years of evolution. Large populations of wild varieties of cultivated plants occur in this region. Even inspite of the various irrigation and hydro-electric projects in the close vicinity some of the areas have never been explored due to the inaccessibility of the difficult terrains in the region. The Singampatti R.F. however, has been considerably disturbed due to cultivation of tea and other plantation crops, and irrigation projects.

4. *Effectiveness as a conservation unit*: The proposed biosphere reserve still harbours natural ecosystems in an extensive contiguous area. Also it is well protected in nature by its remote location, very dense growth of vegetational cover and surrounded by large hilly tracts. Further, the already well established three sanctuaries, namely, Mundanthurai Wild Life Sanctuary, Kalakad Sanctu-

ary and Neyyar Wild Life Sanctuary, protect about 870 sq. km of forest tracts. Hence it requires minimal additional management for the conservation of the biosphere in its totality. Thus, in terms of compactness of area and lack of human pressures, the proposed biosphere reserve is likely to receive adequate protection, and undoubtedly it forms a very viable conservation unit in southern India.

5. *Knowledge of the area's history*: The Agastyamalai mountain range figures prominently in legends and Hindu Mythology. The region is known for its rare herbs, still widely used in ayurvedic medicines. The 'Pothikaimudi' or 'Agasthyarkudam', the tallest peak in the range is associated with the sage Agastya who is said to have lived here on leaves, tubers, fruits and sap of wild plants. The orthodox belief is that Agasthya Maharishi, regarded by modern scholars as the pioneer exponent of astronomy and Aryan civilization in southern India, the originator of Sidha System of medicine and father of the hill and Tamil language, still lives on the peak as a yogi in pious seclusion. It was formerly an important astronomical station where two series of observation were taken by Mr. Broun between 1853 and 1865.

6. *Completeness of flora and fauna surveys*: Though the area attracted Naturalists since the 18th century, intensive field studies were carried out during the last two decades by the Staff of Botanical Survey of India and Zoological Survey of India, and other agencies. The floristic surveys have resulted in the discovery of many new taxa and several new records for India (*vide* VIII. 1.). A consolidated account of the flora of this region is being prepared for publication.

7. *Presence of rare and endangered species*: This area has a unique flora with about 150 local endemics (*vide* VIII. 1.). About

35 rare, endangered/threatened plant species occur here. Some of them are *Hedyotis travancorica* Bedd., *H. barberi* (Gamble) Henry & Subr., *H. villosostipulata* (Gamble) Rolla Rao & Hemadri, *Knoxia linearis* Gamble, *Vernonia heynei* Bedd. ex Gamble, *Marsdenia tirunelvelica* Henry & Subr., *Paphiopedilum druryi* (Bedd.) Pfitz., *Popowia beddomeana* Hook. f. & Thoms., *Piper barberi* Gamble, *Rhynchosia jacobii* Chandrabose & Shetty and *Toxocarpus beddomei* Gamble.

It is of interest to record a good population of the endangered lion-tailed macaque (*Macaca silenus*) in this region.

8. *Potential for research and training activities*: The occurrence of a large number of wild relatives of cultivated plants such as *Elettaria cardamomum* (Roxb.) Maton, *Mangifera indica* L., *Musa superba* Roxb., *Oryza granulata* (Nees) Arn. ex Steud. and *Paphiopedilum druryi* (Bedd.) Pfitz. prove this area to be an ideal genetic reservoir of wild species. All the four contiguous zones of the proposed Biosphere (*vide* V.) have quite a potential for various research and training activities. The Core zone with its undisturbed ecosystem offers much scope for monitoring and non-manipulative research to study the processes and changes occurring without human intervention in the area. The buffer zone encircling the Core zone is potential for manipulative research activities and training in various disciplines of Forestry, Agriculture and Horticulture, and also research into the scientific basis for ecosystem conservation. It also provides natural areas for long term continuous research and monitoring. The four major river valley projects of this area offer enormous opportunity for various impact studies in environmental research, as well as restorative research designed to study ways of rehabilitating degraded ecosystem.

The Stable Cultural Zone of the biosphere is potential for preservation of traditional tribal approach to harmonious use of environment; also there is scope for intensive ethnobiological studies.

CONCLUSION

The establishment of the proposed biosphere reserve will serve for the protection of the non-renewable natural ecosystems which exist over millions of years. In view of the fact that both rain forests and wild populations of non-human primates are becoming increasingly rare on a world scale, it is imperative that an area of the size and importance of Agastyamalai be given the fullest study and protection. The area is also unique in having many endemic species and

is a genetic reservoir of many wild relatives of cultivated plants. Hence, studies should be carried out on topographical features, water flows, geology and soils, natural and man-modified vegetation types, distribution and diversity of species, human settlements, climatology, concentration of atmosphere and water pollutions, productivity, phenology and mineral cycling. It is gratifying to note that the MAB National Committee of the Department of Environment, Govt. of India which has undertaken the task of identifying areas for designation of biosphere reserves, has already taken into consideration this potential area, and we earnestly appeal that speedy steps for collection of any additional data required for the conservation of this area in its totality be undertaken, so that it may serve as an "ecological protectorate".

REFERENCES

MAB National Committee, Govt. of India (1979): Preliminary inventory on Potential areas for Biosphere Reserves. New Delhi.

UNESCO (1974) : Task Force on : Criteria and

guidelines for the choice and establishment of biosphere reserves. MAB Report Series No. 22. UNESCO. Paris.